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RAW SEQUENCE LISTING      DATE: 06/09/2000  
 PATENT APPLICATION: US/09/381,497      TIME: 14:07:35

Input Set : A:\Nih317-1.app  
 Output Set: N:\CRF3\06082000\I381497.raw

4 (1) GENERAL INFORMATION:  
 6    (i) APPLICANT: FitzGerald, David  
 7                    Pastan, Ira  
 8                    Mansfield, Elizabeth  
 9                    Kreitman, Robert  
 11    (ii) TITLE OF INVENTION: Recombinant Antibodies and  
 12                                    Immunoconjugates Targeted to CD-22 Bearing Cells and  
 13                                    Tumors  
 15    (iii) NUMBER OF SEQUENCES: 15  
 17    (iv) CORRESPONDENCE ADDRESS:  
 18            (A) ADDRESSEE: Townsend and Townsend and Crew LLP  
 19            (B) STREET: Two Embarcadero Center, Eighth Floor  
 20            (C) CITY: San Francisco  
 21            (D) STATE: California  
 22            (E) COUNTRY: USA  
 23            (F) ZIP: 94111-3834  
 25    (v) COMPUTER READABLE FORM:  
 26            (A) MEDIUM TYPE: Floppy disk  
 27            (B) COMPUTER: IBM PC compatible  
 28            (C) OPERATING SYSTEM: PC-DOS/MS-DOS  
 29            (D) SOFTWARE: PatentIn Release #1.0, Version #1.30  
 C--> 31    (vi) CURRENT APPLICATION DATA:  
 C--> 32            (A) APPLICATION NUMBER: US/09/381,497  
 C--> 33            (B) FILING DATE: 17-Feb-2000  
 34            (C) CLASSIFICATION:  
 40    (vii) PRIOR APPLICATION DATA:  
 37            (A) APPLICATION NUMBER: WO PCT/US98/05453  
 38            (B) FILING DATE: 19-MAR-1998  
 41            (A) APPLICATION NUMBER: US 60/041,437  
 42            (B) FILING DATE: 20-MAR-1997  
 44    (viii) ATTORNEY/AGENT INFORMATION:  
 45            (A) NAME: Weber, Ellen Lauver  
 46            (B) REGISTRATION NUMBER: 32,762  
 47            (C) REFERENCE/DOCKET NUMBER: 015280-317100US  
 49    (ix) TELECOMMUNICATION INFORMATION:  
 50            (A) TELEPHONE: (415) 576-0200  
 51            (B) TELEFAX: (415) 576-0300  
 54 (2) INFORMATION FOR SEQ ID NO: 1:  
 56    (i) SEQUENCE CHARACTERISTICS:  
 57            (A) LENGTH: 369 base pairs  
 58            (B) TYPE: nucleic acid  
 59            (C) STRANDEDNESS: single  
 60            (D) TOPOLOGY: linear  
 W--> 62    (ii) MOLECULE TYPE: DNA  
 65    (ix) FEATURE:  
 66            (A) NAME/KEY: CDS  
 67            (B) LOCATION: 1..369

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68      (D) OTHER INFORMATION: /product= "RFB4 heavy chain"
71      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:
73 GAA GTG CAG CTG GTG GAG TCT GGG GGA GGC TTA GTG AAG CCT GGA GGG      48
74 Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly
75   1           5           10           15
77 TCC CTG AAA CTC TCC TGT GCA GCC TCT GGA TTC GCT TTC AGT ATC TAT      96
78 Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Ala Phe Ser Ile Tyr
79   20           25           30
81 GAC ATG TCT TGG GTT CGC CAG ACT CCG GAG AAG AGG CTG GAG TGG GTC      144
82 Asp Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
83   35           40           45
85 GCA TAC ATT AGT AGT GGT GGT ACC ACC TAC TAT CCA GAC ACT GTG      192
86 Ala Tyr Ile Ser Ser Gly Gly Gly Thr Thr Tyr Tyr Pro Asp Thr Val
87   50           55           60
89 AAG GGC CGA TTC ACC ATC TCC AGA GAC AAT GCC AAG AAC ACC CTG TAC      240
90 Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
91   65           70           75           80
93 CTG CAA ATG AGC AGT CTG AAG TCT GAG GAC ACA GCC ATG TAT TAC TGT      288
94 Leu Gln Met Ser Ser Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys
95   85           90           95
97 GCA AGA CAT AGT GGC TAC GGT AGT AGC TAC GGG GTT TTG TTT GCT TAC      336
98 Ala Arg His Ser Gly Tyr Gly Ser Ser Tyr Gly Val Leu Phe Ala Tyr
99   100          105          110
101 TGG GGC CAA GGG ACT CTG GTC ACT GTC TCT GCA      369
102 Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala
103   115          120
106 (2) INFORMATION FOR SEQ ID NO: 2:
108      (i) SEQUENCE CHARACTERISTICS:
109          (A) LENGTH: 123 amino acids
110          (B) TYPE: amino acid
111          (D) TOPOLOGY: linear
113      (ii) MOLECULE TYPE: protein
115      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:
117 Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Lys Pro Gly Gly
118   1           5           10           15
120 Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Ala Phe Ser Ile Tyr
121   20           25           30
123 Asp Met Ser Trp Val Arg Gln Thr Pro Glu Lys Arg Leu Glu Trp Val
124   35           40           45
126 Ala Tyr Ile Ser Ser Gly Gly Gly Thr Thr Tyr Tyr Pro Asp Thr Val
127   50           55           60
129 Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Thr Leu Tyr
130   65           70           75           80
132 Leu Gln Met Ser Ser Leu Lys Ser Glu Asp Thr Ala Met Tyr Tyr Cys
133   85           90           95
135 Ala Arg His Ser Gly Tyr Gly Ser Ser Tyr Gly Val Leu Phe Ala Tyr
136   100          105          110
138 Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala
139   115          120

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142 (2) INFORMATION FOR SEQ ID NO: 3:
144   (i) SEQUENCE CHARACTERISTICS:
145       (A) LENGTH: 321 base pairs
146       (B) TYPE: nucleic acid
147       (C) STRANDEDNESS: single
148       (D) TOPOLOGY: linear
W--> 150   (ii) MOLECULE TYPE: DNA
153   (ix) FEATURE:
154       (A) NAME/KEY: CDS
155       (B) LOCATION: 1..321
156       (D) OTHER INFORMATION: /product= "RFB4 light chain"
159   (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:
161 GAT ATC CAG ATG ACC CAG ACT ACA TCC TCC CTG TCT GCC TCT CTG GGA      48
162 Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly
163   1           5           10           15
165 GAC AGA GTC ACC ATT AGT TGC AGG GCA AGT CAG GAC ATT AGC AAT TAT      96
166 Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Ser Asn Tyr
167   20           25           30
169 TTA AAC TGG TAT CAG CAG AAA CCA GAT GGA ACT GTT AAA CTC CTG ATC     144
170 Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
171   35           40           45
173 TAC TAC ACA TCA ATA TTA CAC TCA GGA GTC CCA TCA AAG TTC AGT GGC     192
174 Tyr Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Lys Phe Ser Gly
175   50           55           60
177 AGT GGG TCT GGA ACA GAT TAT TCT CTC ACC ATT AGC AAC CTG GAG CAA     240
178 Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln
179   65           70           75           80
181 GAA GAT TTT GCC ACT TAC TTT TGC CAA CAG GGT AAT ACG CTT CCG TGG     288
182 Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp
183   85           90           95
185 ACG TTC GGT GGA GGC ACC AAG CTG GAA ATC AAA                        321
186 Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
187   100          105
190 (2) INFORMATION FOR SEQ ID NO: 4:
192   (i) SEQUENCE CHARACTERISTICS:
193       (A) LENGTH: 107 amino acids
194       (B) TYPE: amino acid
195       (D) TOPOLOGY: linear
197   (ii) MOLECULE TYPE: protein
199   (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:
201 Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly
202   1           5           10           15
204 Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Ser Asn Tyr
205   20           25           30
207 Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val Lys Leu Leu Ile
208   35           40           45
210 Tyr Tyr Thr Ser Ile Leu His Ser Gly Val Pro Ser Lys Phe Ser Gly
211   50           55           60
213 Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln

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214 65              70              75              80
216 Glu Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp
217              85              90              95
219 Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
220              100             105
223 (2) INFORMATION FOR SEQ ID NO: 5:
225   (i) SEQUENCE CHARACTERISTICS:
226       (A) LENGTH: 4 amino acids
227       (B) TYPE: amino acid
228       (C) STRANDEDNESS:
229       (D) TOPOLOGY: linear
231   (ii) MOLECULE TYPE: peptide
234   (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:
236     Gly Gly Gly Ser
237
240 (2) INFORMATION FOR SEQ ID NO: 6:
242   (i) SEQUENCE CHARACTERISTICS:
243       (A) LENGTH: 33 base pairs
244       (B) TYPE: nucleic acid
245       (C) STRANDEDNESS: single
246       (D) TOPOLOGY: linear
W--> 248   (ii) MOLECULE TYPE: DNA
251   (ix) FEATURE:
252       (A) NAME/KEY: -
253       (B) LOCATION: 1..33
254       (D) OTHER INFORMATION: /note= "RFB4 VH5 heavy chain primer"
257   (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:
259 GGACCTCATA TGGAGAGTGA GCTGGTGGAG TCT 33
262 (2) INFORMATION FOR SEQ ID NO: 7:
264   (i) SEQUENCE CHARACTERISTICS:
265       (A) LENGTH: 24 base pairs
266       (B) TYPE: nucleic acid
267       (C) STRANDEDNESS: single
268       (D) TOPOLOGY: linear
W--> 270   (ii) MOLECULE TYPE: DNA
273   (ix) FEATURE:
274       (A) NAME/KEY: -
275       (B) LOCATION: 1..24
276       (D) OTHER INFORMATION: /note= "gamma-CH1 heavy chain primer"
279   (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:
281 AGCAGATCCA GGGGCCAGTG GATA 24
284 (2) INFORMATION FOR SEQ ID NO: 8:
286   (i) SEQUENCE CHARACTERISTICS:
287       (A) LENGTH: 54 base pairs
288       (B) TYPE: nucleic acid
289       (C) STRANDEDNESS: single
290       (D) TOPOLOGY: linear
W--> 292   (ii) MOLECULE TYPE: DNA
295   (ix) FEATURE:

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296      (A) NAME/KEY: -
297      (B) LOCATION: 1..54
298      (D) OTHER INFORMATION: /note= "RFB4 VH3 heavy chain primer"
301      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:
303 AGATCCGCCA CCACCGGATC CGCTCCGCC TGCAGAGACA GTGACCAGAG TCCC      54
306 (2) INFORMATION FOR SEQ ID NO: 9:
308      (i) SEQUENCE CHARACTERISTICS:
309          (A) LENGTH: 27 base pairs
310          (B) TYPE: nucleic acid
311          (C) STRANDEDNESS: single
312          (D) TOPOLOGY: linear
W--> 314      (ii) MOLECULE TYPE: DNA
317      (ix) FEATURE:
318          (A) NAME/KEY: -
319          (B) LOCATION: 1..27
320          (D) OTHER INFORMATION: /note= "RFB4 VH3 dsFv heavy chain
321 primer"
325      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:
327 CCGGAAGCTT TTGCAGAGAC AGTGACC      27
330 (2) INFORMATION FOR SEQ ID NO: 10:
332      (i) SEQUENCE CHARACTERISTICS:
333          (A) LENGTH: 28 base pairs
334          (B) TYPE: nucleic acid
335          (C) STRANDEDNESS: single
336          (D) TOPOLOGY: linear
W--> 338      (ii) MOLECULE TYPE: DNA
341      (ix) FEATURE:
342          (A) NAME/KEY: -
343          (B) LOCATION: 1..28
344          (D) OTHER INFORMATION: /note= "RFB4 VH dsFv(cys) heavy chain
345 primer"
348      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:
350 GACCCACTCC AGGCACTTCT CCGGAGTC      28
353 (2) INFORMATION FOR SEQ ID NO: 11:
355      (i) SEQUENCE CHARACTERISTICS:
356          (A) LENGTH: 48 base pairs
357          (B) TYPE: nucleic acid
358          (C) STRANDEDNESS: single
359          (D) TOPOLOGY: linear
W--> 361      (ii) MOLECULE TYPE: DNA
364      (ix) FEATURE:
365          (A) NAME/KEY: -
366          (B) LOCATION: 1..48
367          (D) OTHER INFORMATION: /note= "RFB4 VL5 light chain primer"
370      (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:
372 GGTGGCGGAT CTGGAGGTGG CGGAAGCGAT ATCCAGATGA CACAGACT      48
375 (2) INFORMATION FOR SEQ ID NO: 12:
377      (i) SEQUENCE CHARACTERISTICS:
378          (A) LENGTH: 24 base pairs

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## VERIFICATION SUMMARY

DATE: 06/09/2000

PATENT APPLICATION: US/09/381,497

TIME: 14:07:36

Input Set : A:\Nih317-1.app

Output Set: N:\CRF3\06082000\I381497.raw

L:62 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=1, Value=[DNA]  
L:150 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=3, Value=[DNA]  
L:248 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=6, Value=[DNA]  
L:270 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=7, Value=[DNA]  
L:292 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=8, Value=[DNA]  
L:314 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=9, Value=[DNA]  
L:338 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=10, Value=[DNA]  
L:361 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=11, Value=[DNA]  
L:383 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=12, Value=[DNA]  
L:405 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=13, Value=[DNA]  
L:427 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=14, Value=[DNA]  
L:450 M:246 W: Invalid value of Alpha Sequence Header Field, [MOLECULE TYPE:], SeqNo=15, Value=[DNA]